



PATENT APPLICATION

Mo-6019

LeA 33,933

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION OF)
)
STEFFEN HOFACKER ET AL) GROUP NO.: 1773
)
SERIAL NUMBER: 09/829,684)
)
FILED: APRIL 10, 2001) EXAMINER: S. AHMEED
)
TITLE: PLASTICS STABILIZED WITH ZINC)
OXIDE-CONTAINING, ABRASION-)
RESISTANT MULTILAYERS)

APPEAL BRIEF

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Appeal Brief is submitted in support of the Notice of Appeal mailed on June 30, 2004. The Notice of Appeal appeals the rejection of Claims 15, 18, 19, and 22-24 in the Final Office Action dated March 30, 2004.

The headings used hereinafter and the subject matter set forth under each heading are in accordance with 37 C.F.R. § 1.192(c).

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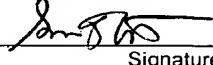
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Date

Gary F. Matz, Reg. No. 45,504

Name of applicant, assignee or Registered Representative



Signature

August 30, 2004

Date

I. REAL PARTY IN INTEREST

The named inventor has assigned his interest in this application to Bayer Aktiengesellschaft (Bayer), and, as such, Bayer is the real party in interest in this Appeal.

II. RELATED APPEALS AND INTERFERENCES

The Appellant is unaware of other appeals or of any interference that would directly affect or be directly affected by, or have bearing on, the present appeal.

III. STATUS OF CLAIMS

Claims 15, 18, 19, and 22-24 are pending but stand rejected under 35 U.S.C. § 103(a), as being directed to subject matter which would have been obvious to one of ordinary skill in the art at the time the invention was made from the teaching of U.S. Patent No. 6,319,594 to Suzuki et al. (hereinafter "Suzuki"). Claim 15 stands rejected under 35 U.S.C. § 103(a) as being obvious over EP 0 763 581 A2 to Abe et al. (hereinafter "Abe"). Claims 1-14 were cancelled and Claims 15-24 were added in an Amendment dated May 21, 2003. Claims 16, 17, 20 and 21 were cancelled and Claim 15 was amended in an Amendment dated October 29, 2003.

IV. STATUS OF AMENDMENTS

Claims 15, 18, 19, and 22-24 are on appeal. Appellants filed a Response dated May 5, 2004 but no amendments after final rejection.

V. SUMMARY OF THE INVENTION

The claims on appeal are directed toward a plastic article, which is transparent and consists of a plastic substrate, optionally a coupling layer, at least one zinc oxide coating, wherein the coating consists essentially of zinc oxide nanoparticles which have a primary particle size of from 1 to 30 nm and which are embedded in an organosilane as a binder resin, and one abrasion resistant outer coating.

VI. ISSUES PRESENTED

The following issues are presented in this Appeal:

- a) Whether Claims 15, 18, 19, and 22-24 are directed toward obvious subject matter in light of Suzuki.
- b) Whether Claim 15 is directed toward obvious subject matter in light of Abe.

VII. GROUPING OF CLAIMS

Claims 15, 18, 19, and 22-24 stand or fall together.

VIII. ARGUMENT

The arguments set forth in the Response May 5, 2004 in response to the Final Office Action dated March 30, 2004 are herein incorporated by reference.

Each issue presented for review is addressed hereinafter under the appropriate heading:

- a) Claims 15, 18, 19, and 22-24 are not directed toward obvious subject matter in light of Suzuki.**

The present invention is directed to a plastic article, which is transparent and consists of a plastic substrate, optionally a coupling layer, at least one zinc oxide coating, wherein the coating consists essentially of zinc oxide nanoparticles which have a primary particle size of from 1 to 30 nm and which are embedded in an organosilane as a binder resin, and one abrasion resistant outer coating.

Suzuki discloses a film that includes a transparent substrate film; and, provided on the transparent substrate film in the following order, a transparent conductive layer, a hardcoat layer, and a low refractive layer, the low refractive layer having a lower refractive index than the hardcoat. The transparent conductive layer is formed from a conductive coating liquid containing conductive fine particles and a reactive curing resin. The conductive fine particles used in the formation of the transparent conductive layer include fine particles of antimony-doped indium-tin

oxide ("ATO"), and indium-tin oxide (ITO). Metals and metal oxides used in the formation of the conductive thin film by sputtering or the like include, gold, nickel, ATO, ITO, and zinc oxide/aluminum oxide.

The Examiner has equated the transparent conductive layer in Suzuki with the present zinc oxide coating.

As a first matter, the sputtered zinc oxide/aluminum oxide coating in Suzuki is different than the coating consisting essentially of zinc oxide nanoparticles in the present invention. The present coating contains discretely deposited zinc oxide nanoparticles whereas the sputtered zinc oxide/aluminum oxide coating in Suzuki is a continuous film. See for example Hawley, The Condensed Chemical Dictionary, 8th Edition, Van Nostrand Reinhold Co., New York, NY (1971), page 820:

Sputtered coating. A protective metallic coating applied in a vacuum tube and consisting of metal ions emanating from a cathode deposited as a film on objects within the tube. The process involves three phases: generation of metal vapor, diffusion of the vapor, and its condensation. Paper, plastics, and similar materials can be coated this way.

The coating of the present invention is described at page 3, lines 16-19 of the specification:

In the context of the invention, zinc oxide-containing coatings are those which, in addition to a suitable binder, preferably contain zinc oxide particles with a primary particle size of from 1 to 30 nm, such that no noteworthy scattering or absorption is observed in the visible light range.

Thus, it is clear that the sputtered zinc oxide/aluminum oxide coating disclosed in Suzuki is not the coating containing discretely deposited zinc oxide nanoparticles as is presently claimed and there is no suggestion or motivation in Suzuki to the contrary.

Further, the Examiner has misinterpreted the claim language regarding the composition of the coating. In maintaining his rejection, the Examiner suggests that the transition phrase "consisting essentially of," as used in the present claims, is equivalent to comprising because there is no clear indication in the specification or

claims what the basic and novel characteristics are of the zinc oxide and, therefore, the composite material, zinc oxide/aluminum oxide, meets the consisting essentially of zinc oxide limitation. In support of his assertion, the Examiner primarily relies on In re Herz, 537 F.2d 549 (CCPA 1976), PPG Industries v. Guardian Industries, 156 F.3d 1351 (Fed. Cir. 1998).

Appellants note that "claims are given their broadest reasonable construction consistent with the specification." In re Herz, 537 F.2d at 551. "Therefore, in construing the phrase 'consisting essentially of' ... it is necessary and proper to determine whether [the] specification reasonably supports a construction that would include [other] additives." *Id.* The "phrase 'consisting essentially of' limits the scope of a claim to the specified ingredients and those that do not materially affect the basic and novel characteristic(s) of a composition." In re Herz, at 551-552.

Consisting essentially of" is a transition phrase commonly used to signal a partially open claim in a patent. Typically, "consisting essentially of" precedes a list of ingredients in a composition claim or a series of steps in a process claim. By using the term "consisting essentially of," the drafter signals that the invention necessarily includes the listed ingredients and is open to unlisted ingredients that do not materially affect the basic and novel properties of the invention. A "consisting essentially of" claim occupies a middle ground between closed claims that are written in a "consisting of" format and fully open claims that are drafted in a "comprising" format. PPG Industries, 156 F.3d at 1354.

As indicated above, the present invention is directed to a plastic article, which is transparent and consists of a plastic substrate, optionally a coupling layer, at least one zinc oxide coating, and one abrasion resistant outer coating. The coating consists essentially of zinc oxide nanoparticles which have a primary particle size of from 1 to 30 nm and which are embedded in an organosilane as a binder resin. The

language of the claim is very clear, a zinc oxide coating is used to make a transparent plastic article. No other nanoparticles are mentioned. Yet the Examiner feels free to substitute any other type of coating that includes other materials as well as zinc oxide in order to frame his rejection under 35 U.S.C. § 103(a).

As noted above, Appellants were very clear in describing the coating as zinc oxide-containing coatings are those which, in addition to a suitable binder, preferably contain zinc oxide particles with a primary particle size of from 1 to 30 nm, such that no noteworthy scattering or absorption is observed in the visible light range (page 3, lines 16-19 of the specification).

The Examiner argues that there is no clear indication in the specification of what the basic and novel characteristics of the zinc oxide particles are and takes liberty to interpret the “consisting essentially of” transition phrase as “comprising.” However, Appellants are perfectly clear in stating the basic and novel characteristics of the zinc oxide nanoparticles is that they scatter or absorb light in the visible range.

As such, the requirements under In re Herz and PPG Industries are met and the “consisting essentially of” transition phrase should be given its proper interpretation of limiting the scope of the claims to the specified ingredients and those that do not materially affect the basic and novel characteristic(s) of the composition. Appellants contend that even if Suzuki disclosed zinc oxide/aluminum oxide nanoparticles in the coating (which it does not because Suzuki discloses a continuous sputtered zinc oxide/aluminum oxide film), the change in composition could effect the basic and novel characteristics provided by the zinc oxide nanoparticles, i.e., that they scatter or absorb light in the visible range.

In Suzuki, two types of transparent conductive layers are proposed. First, a conductive coating liquid containing conductive fine particles and a reactive curing resin can be coated onto a plastic film. The second potential method would be where a metal or a metal oxide capable of forming a transparent film is vapor deposited or sputtered to form a conductive thin layer (col. 3, lines 4-9). When a coating liquid is used, antimony-doped indium-tin oxide and indium-tin oxide particles are used. When a sputtering method is used, gold, nickel, ATO, ITO, or zinc oxide/aluminum oxide are used (col. 3, lines 17-29). The Examiner feels free to

intermix the materials used in the coating method with those used in the sputtering method without any express or implied suggestion or motivation in Suzuki to do so. Appellants stress that Suzuki only discloses a continuous film of zinc oxide/aluminum oxide under the second method and not a coating containing fine particles as in the first method.

The Examiner suggests that there is no difference when his proposed sputtered coating layer is used to replace the claimed zinc oxide nanoparticle containing coating. Appellants point out that the difference in technique and composition materially change the nature of the coating and are not at all within the scope of the invention.

The claimed plastic article consists of a plastic substrate, optionally coupling layer (ii) and coatings (iii) and (iv). None of these is a sputtered coating. So the sputter coating itself is outside of the scope of the present claims.

Further there is no suggestion or motivation in Suzuki to use fine particles of the sputtering materials to replace the fine particles in the liquid coating. Thus, there is no disclosure in Suzuki to use fine particles of aluminum oxide/zinc oxide in the liquid coating. Therefore, even though Appellants maintain that such particles are not within the scope of the invention, there is no motivation even in Suzuki to use them.

Appellants respectfully reiterate in meeting their burden under 37 C.F.R. § 1.192 (8)(iv) that Suzuki does not teach, or in any way suggest the limitation of "at least one zinc oxide coating, wherein the coating consists essentially of zinc oxide nanoparticles which have a primary particle size of from 1 to 30 nm and which are embedded in an organosilane as a binder resin, and one abrasion resistant outer coating."

As Suzuki does not provide any disclosure or motivation for using a zinc oxide coating consisting essentially of zinc oxide nanoparticles in the film, as presently claimed, it does not anticipate the claims. Therefore, the rejection of claims 15-24 under 35 U.S.C. § 103(a) should be reversed.

b) Claim 15 is not directed toward obvious subject matter in light of Abe.

Abe discloses a primer composition used to form a layer between a plastic lens surface and an overlying hard coat layer to improve the shock resistance of the overall lens structure. The hard coat layer contains a specified polyvinyl acetal, a hydrolyzable organosilane cross-linking agent, a metal alkoxide and minute inorganic particles.

Abe does not disclose or in any way suggest films having an abrasion resistant outer coating containing sol-gel materials as is required in the present invention.

Appellants respectfully point out that the missing claim limitations in Abe, i.e., that the films in Abe do not have, nor is there any suggestion or motivation for them to have an abrasion resistant outer coating containing sol-gel materials as is required in the present invention satisfies Appellants burden under 37 C.F.R. § 1.192 (8)(iv).

Therefore the claims are not obvious over Abe and the rejection of Claim 15 under 35 U.S.C. § 103(a) should be reversed.

IX. SUMMARY

When making rejections under 35 U.S.C. § 103, the Examiner has the burden of establishing a *prima facie* showing of obviousness. In re Fritch, 972 F.2d 1260, 1265, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992). To establish a *prima facie* case, the Examiner must satisfy three requirements. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. See In re Fine, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); In re Skinner, 2 U.S.P.Q.2d 1788, 1790 (Bd. Pat. App. & Int. 1986). Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. See Amgen Inc. v. Chugai Pharmaceutical Co. Ltd., 927 F.2d 1200, 1208, 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir.

1991). Hindsight is not a justifiable basis on which to find that ultimate achievement of a goal was obvious. Id. Lastly, the prior art reference or combination of references must teach or suggest all the limitations of the claims. See In re Wilson, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

Moreover, the teachings or suggestions, as well as the expectation of success, must come from the prior art, not Appellant's disclosure. See In re Vaeck, 947 F.2d 488, 492, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). Also, the mere fact that the prior art could be modified would not have made the modification obvious unless the prior art suggested the desirability of the modification. In re Laskowski, 871 F.2d 115, 117, 10 U.S.P.Q.2d 1397, 1399 (Fed. Cir. 1989) (quoting In re Gordon, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984)).

Here, in relying on Suzuki, the Examiner has failed to provide any suggestion or incentive that would have motivated the skilled artisan to disregard the teaching in Suzuki to use a continuous sputtered film of zinc oxide/aluminum oxide and instead use zinc oxide/aluminum oxide fine particles and a reactive curing resin in the coating. Thus, there is no reasonable expectation of success for modifying Suzuki as the Examiner has done and Suzuki does not teach or suggest all the limitations of the claims.

Similarly, with respect to Abe, the Examiner has failed to provide any suggestion or incentive that would have motivated the skilled artisan to use an abrasion resistant outer coating containing sol-gel materials in Abe as is required in the present invention. Thus, there is no reasonable expectation of success for modifying Abe as the Examiner has done and Abe does not teach or suggest all the limitations of the claims.

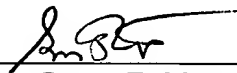
Therefore, the Examiner has not presented sufficient evidence to support his *prima facie* case and the rejections of Claims 15, 18, 19, and 22-24 under 35 U.S.C. § 103 should be reversed.

X. CONCLUSION

The claims define a unique plastic article, which is transparent and consists of a plastic substrate, optionally a coupling layer, at least one zinc oxide coating, wherein the coating consists essentially of zinc oxide nanoparticles which have a primary particle size of from 1 to 30 nm and which are embedded in an organosilane as a binder resin, and one abrasion resistant outer coating. The Examiner has misapplied the disclosures in Suzuki and Abe in order to build his *prima facie* case. Thus, all of the limitations of the independent claim or the corresponding dependent claims are not found in the cited references. In order to establish a *prima facie* case, the Examiner must show that each limitation is met or made obvious by the applied prior art and the Examiner has failed to do so. The preponderance of evidence clearly establishes the allowability of claims 15, 18, 19, and 22-24. Reversal of all of the Examiner's rejections and allowance of these claims are respectfully requested.

The Commissioner for Patents is hereby authorized to charge the \$330.00 Appeal Brief fee as well as any additional fees which may be required to Deposit Account No.13-3848. An original and two copies of this Appeal Brief are enclosed.

Respectfully submitted,

By 

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APPENDIX - CLAIMS ON APPEAL

Claim 15. A plastic article, which is transparent and consists of

- i) a plastic substrate,
- ii) optionally a coupling layer,
- iii) at least one zinc oxide coating, wherein the coating consists essentially of zinc oxide nanoparticles which have a primary particle size of from 1 to 30 nm and which are embedded in an organosilane as a binder resin, and
- iv) one abrasion resistant outer coating containing sol-gel

materials.

Claim 18. The plastic article of Claim 15, wherein the zinc oxide particles are surface-modified with 3-glycidoxypropyltrimethoxysilane.

Claim 19. The plastic article of Claim 15, wherein the plastic substrate comprises a member selected from the group consisting of polyamide, polyethylene, polypropylene, polymethyl methacrylate, polystyrene, polyvinyl cyclohexane and copolymers thereof, acrylonitrile/butadiene/styrene copolymers (ABS), polyvinyl chloride, polycarbonate and blends thereof.

Claim 22. The plastic article of Claim 19, wherein the zinc oxide particles are surface-modified with 3-glycidoxypropyltrimethoxysilane.

Claim 23. A method of protecting a plastic article against UV radiation and against mechanical damage comprising:

- a) applying at least one zinc oxide coating to said article, wherein the coating consists essentially of zinc oxide nanoparticles which have a primary particle size of from 1 to 30 nm and an organosilane as a binder resin, and

b) applying an abrasion resistant coating to the zinc oxide coating.

Claim 24. The method of Claim 23, wherein a coupling layer is applied to said article before application of said zinc oxide coating.



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LETTER

Commissioner for Patents
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Sir:

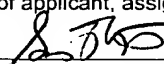
Enclosed herewith are three copies of an Appeal Brief in the matter of the subject Appeal. Please charge the fee for filing the Brief, \$330.00, to our Deposit Account Number 13-3848.

Respectfully submitted

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August 30, 2004
Date